AMBUSH IN DEALEY PLAZA

An Analysis of the Shooting of President John F. Kennedy

A Preliminary Chapter Manuscript

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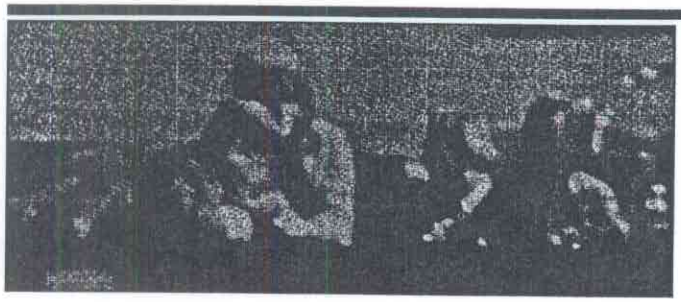

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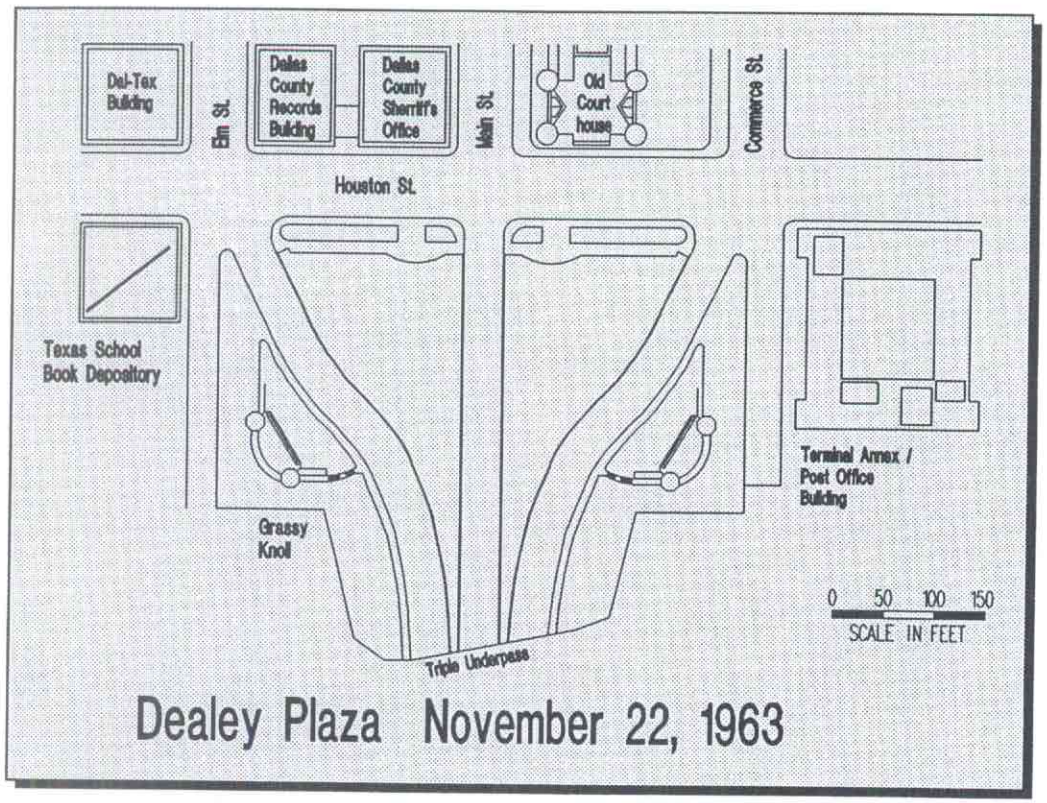


INTRODUCTION

Since the assassination of President Kennedy there have been several excellent studies done of the shooting itself. The best of these studies are *Josiah Thompson's* Six Seconds in Dallas and *Michael Kurtz's* Crime of the Century. These studies concentrate on photographs taken in Dealey Plaza and most especially, a 16 mm motion picture film taken by *Abraham Zapruder*. Mr. Zapruder's film, when used in conjunction with still photos, such as those taken by *Phil Willis, Mary Moorman*, and *James Altgens,* provides a large amount of detailed information.

Using the Zapruder film as a stop-watch to measure distance and position, and corroborating it with measurements from still photos has not resulted in any two studies having the same conclusion. Possible positions for gunmen in Dealey Plaza are numerous and most of these locations are depicted in photographs taken during the shooting. Four locations have often been suggested as the probable

locations of gunmen other than the southeast window of the sixth floor of the Texas School Book Depository.

Based on the temporary arrest of two men connected with organized crime in the Dal-Tex Building and the proximity of that building to the TSBD, several locations in that building have been suggested as locations for gunmen. In his reconstruction of the shooting, Josiah Thompson placed a gunman on the roof of the Dallas County Records Building. Evidence discovered later supports this possibility. Most researchers have concluded that a gunman on the grassy knoll, from one of three possible positions, fired the shot which mortally wounded the President in the head. Still others have concluded that the shot to the front of the President's throat was fired from a position on the Triple Underpass ahead of the Presidential limousine.

THE CONTEXT OF THE ANALYSIS

I had heard it said that the Kennedy assassination was the "most photographed murder in history."[1] After viewing the Zapruder film repeatedly, looking for something that somebody else hadn't seen, I was more confused than when I began my inquiry. Many still photos taken of the shooting shed some additional light on general locations and relative positions, but they also added some confusion of their own. I soon realized that while many had gathered inferred data from interpretation, few had actually made measurements of the photographic evidence. My goal was to derive a logical pattern to the scientific data that would pinpoint what most probably happened on November 22, 1963 at 12:30 pm in Dealey Plaza.

There were many people doing photo interpretation with the evidence of the assassination. Some were professionals, some amateurs, some were even scientific foundations like the National Academy of Sciences.[2] I knew there was one thing that I had to do that not too many others had ventured to do. I had to apply scientific standards of measurement to the photographic evidence. With the data gathered from this analysis, I felt the most logical sequence of events could be pinpointed.

With all the controversy about the order and number of shots fired, I felt it was best to break down the puzzle into smaller parts by analyzing each wound separately. The diagrams and maps included in this chapter are taken directly from scaled maps of Dealey Plaza. The position for landmarks such as buildings and fences, and the position of moving objects such as the limousine, have been derived from a careful photogrammetric measurement of frames of the Zapruder film and other still photographs. My inquiry began with the throat wound.

CONNECTED WOUNDS?

It seems the one missing piece to all the data that could allow anybody - Commission and critic alike - to pinpoint the source, destination, and effects of the first non-fatal shot is missing. It is most unfortunate that of all the photographic evidence available, the first shot was either unrecorded by most cameras at the scene or partially obscured. Still, the origin of the throat wound can be pinpointed by combining the timing data of the Zapruder film, logical deduction, the autopsy findings, medical observations, and finally, photogrammetry.

The Zapruder film missed many details about the first shot. Unfortunately, Abraham Zapruder's now-famous camera was blocked at the critical moment by a highway sign. History will never have the benefit of clear photographic evidence of the President's throat wound.[3] One detail that was not missed, however, was the timing of the shot in relation to any other shots. A shot was fired that wounded Kennedy in the front of the throat approximately 1.5 seconds before Governor Connally was wounded by a second shot. This point may still be contested by defenders of the Warren Commission but I will deal with the single bullet theory in another chapter.

The logical deduction that led me to the determination of the path of the bullet that caused the throat wound and its effects on the President started with the collected observations and testimony contained in the two major government investigations into the assassination as well as those of private researchers who had studied it. By considering all the possible paths of the throat shot and eliminating any conclusions that did not correspond strictly to known fact, the real path of that shot could be narrowed down.

A TRAVERSAL OF THE BODY?

Diagram 2-1 shows all the possible bullet paths for a traversing shot. The path labeled **A** is the path of a bullet matching the position of Kennedy at the moment the Willis slide was taken, that would have originated from above and behind as concluded by the Warren Commission, and exited the throat at the position shown by the autopsy photographs[4] and observed by the Dallas doctors[5]. This path could not have been the actual path of the throat shot based on additional autopsy photographs that show no entry wound at such a high position on the back of the throat.[6] If a bullet would have traversed the throat at this angle, the trauma to the front of the throat, the windpipe, the larynx, and possibly the spine in the neck would have been much more extensive then they were. Kennedy probably would not have retained consciousness after such trauma as would have been caused by a shot taking this path. Neither would he have been grasping only at his throat if he did retain

consciousness. He probably would have also been grabbing for the back of his neck and possibly arching backward after recovering from the forward thrust.

The Zapruder film shows Kennedy was driven or lurched backward. A shot that took path **A** would undoubtedly cause a violent forward motion. I could have gone further in showing that this path was not that of the throat shot, but facts that pertain to other possible shot paths from high and to the rear of the President only add to its discredit.

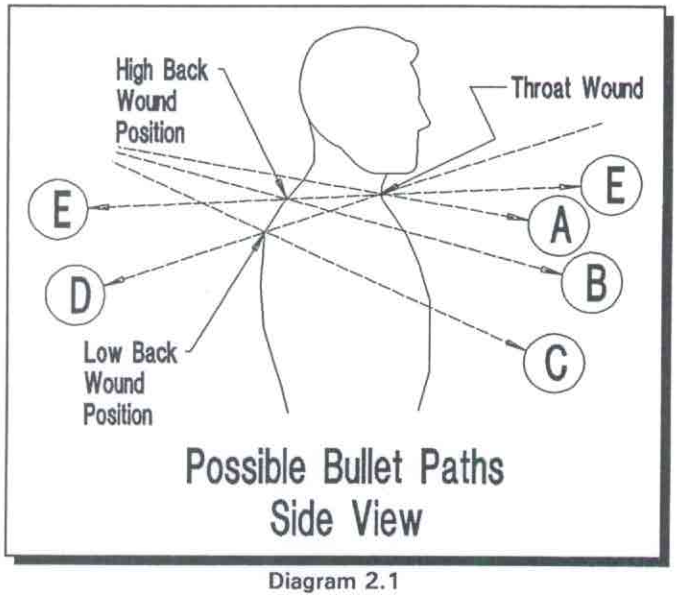


Diagram 2.1

The path marked **B** on the diagram corresponds to a shot that would have originated from high and to the rear and caused an entry wound in the back at the position shown by the autopsy photographs (AP 5.) Again, the Willis slide shows that the President was sitting upright at the moment of the throat shot. If a bullet travelling at full velocity entered the body at this position, high on the shoulder, and at the angle obtained by a sniper firing from the sixth floor of the Texas School Book Depository, there would have been a large wound of exit somewhere in the middle of the chest (much like that suffered by *Governor John Connally*.) President Kennedy never suffered from such a wound.

Again, President Kennedy was filmed by Zapruder grasping his throat and lurching to the rear. He had retained consciousness after being hit. It is unlikely that anyone could suffer such trauma to the upper chest without at least reacting in a way Governor Connally did to his chest wound - falling downward and forward. After all, the point is moot. Nobody ever tried to suggest such a path, even if it did match with the position of the back entry wound shown by the autopsy photographs. Given these facts, I felt I could eliminate path **B** as a possibility for the course of the throat shot.

The path marked **C** on the diagram corresponds to a shot that would have originated from high and to the rear and would have entered the back at a position that corresponded to that shown on Dr. Boswell's autopsy face sheet that is thought to be the actual position of the wound by many researchers. Many critics of the Warren Commission maintain the back wound was one of exit, I at

least had to consider the possibility that Boswell's face sheet was correct in its placement of an entry wound.

Kennedy was in an upright position as shown by the Willis slide, a bullet that entered the back at this position and traversed the body would have left the body through a large exit wound in the middle of the chest. No such wound ever existed on President Kennedy's body. For reasons similar to those that caused me to discount the possibility of path B, I eliminated path C.

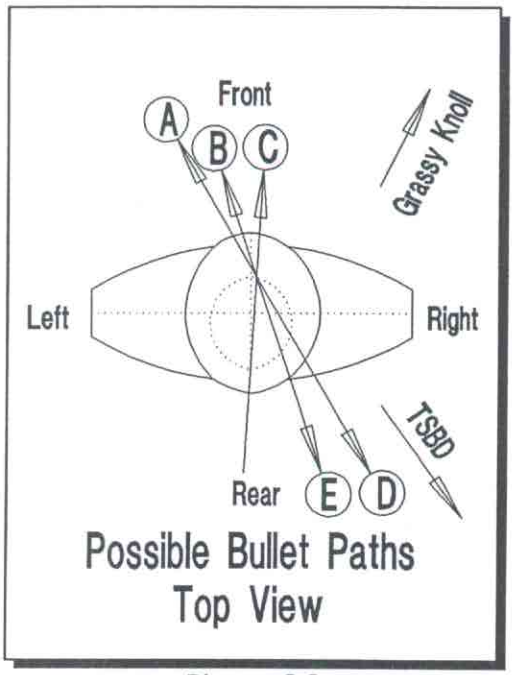


Diagram 2.2

At this point, it is necessary to mention the theories surrounding possible entry wounds at either position B or C. There is seemingly contradictory evidence that places an entry wound in one of these two positions. For years, the argument over which position was true was based on two opposing opinions on the nature and cause of the back wound. Those who defend the Warren Commission's conclusion maintain that the back entry wound was high on the back of the President's shoulder. Those who hold other opinions on the assassination, distrust the photographs showing an entry wound high on the shoulder. They prefer to give more credibility to the autopsy body chart prepared by Dr. Thornton Boswell at Bethesda Naval Hospital.

Nevertheless, all the possible paths of traverse through President Kennedy's body that would connect the two wounds were not eliminated. Many researchers had proposed that the first shot traversed the President's body from front to back. The two possible front-to-back paths for the first shot are marked D and E in Diagram 2-1.

Both paths correspond to an entry wound in the front of the throat as described by the Dallas doctors and to a traversal of the body, exiting at either the higher or lower back wound positions respectively. These paths could explain the actions of the President after the first shot. Grasping his throat and lurching toward his rear, Kennedy showed an expression of shock. After recovering slightly, he seemed to be struggling to breathe.

The difficulties with either path D or E lay in two categories - wound characteristics and the horizontal angle of the bullet path. The observation of the autopsy doctors and the wounds shown by

the autopsy photographs clearly show that the back wound was an entry wound. In addition, a front-to-back traversal of the body was not confirmed by the autopsists. Indeed, a traversal of the body, in any direction, could not be confirmed. The autopsy doctors could not trace a path through the body. Secret Service Agent *Roy Kellerman*, who was present at the autopsy, asked *Dr. Pierre Finck* where the bullet that caused the back wound went. Dr. Finck replied, "There are no lanes for an outlet of this entry in this man's shoulder."[7]

Further disproof of a front-to-back traversal of the body from either frontal path comes from an examination of the path that a bullet would have to take to connect the two wounds. If paths **D** and **E** from Diagram 2-1 are shown from above (*Diagram 2-2,*) it is clear they originate from Kennedy's left front and point toward his right rear. These paths were blocked by people or structures within the Presidential limousine at the moment of the first shot. Any shot fired from these angles would have had to originate from a point much higher than anything within the area ahead of the motorcade.

I could now rule out all possible traversal paths through President Kennedy's body and conclude that the front and back wounds were not connected. A reasonable amount of logical deduction and evidence had confirmed this for me.

THROAT WOUND SEPARATE?

Until this point, I had only considered the possibility of a connection between the wounds in President Kennedy's back and in his throat as being caused by a single bullet that traversed the body. The assumption that the back and throat wounds were caused by a single bullet on a path of traversal was not only made by the Warren Commission. Several Commission critics and researchers, who had expressed an opinion, had made the same assumption. *Thomas Buchanan*, in his book Who Killed Kennedy?, theorized that the throat shot (and the fatal head shot for that matter,) originated from the triple underpass in front of the President.[8] A shot from the triple underpass was impossible, due to the obstructions in a would-be sniper's view. (*See Diagram 2-3.*)

Other researchers seemingly overwhelmed by the eye and earwitness reports of shots from the grassy knoll, theorized that the throat shot originated from the President's right front.[9] This scenario, while not disproved by my original deductive reasoning, had to be eliminated as a possibility for three reasons. First, the throat and back wounds did not align with a path from the right front. In addition, the back wound did not show any characteristics of being an exit wound. Finally, the proposed path from the

grassy knoll at the moment of the throat shot was blocked by the highway sign that blocked Zapruder's view. (*See Diagram 2-4.*)

Having considered all the possible - and not so possible - shot paths that could have traversed

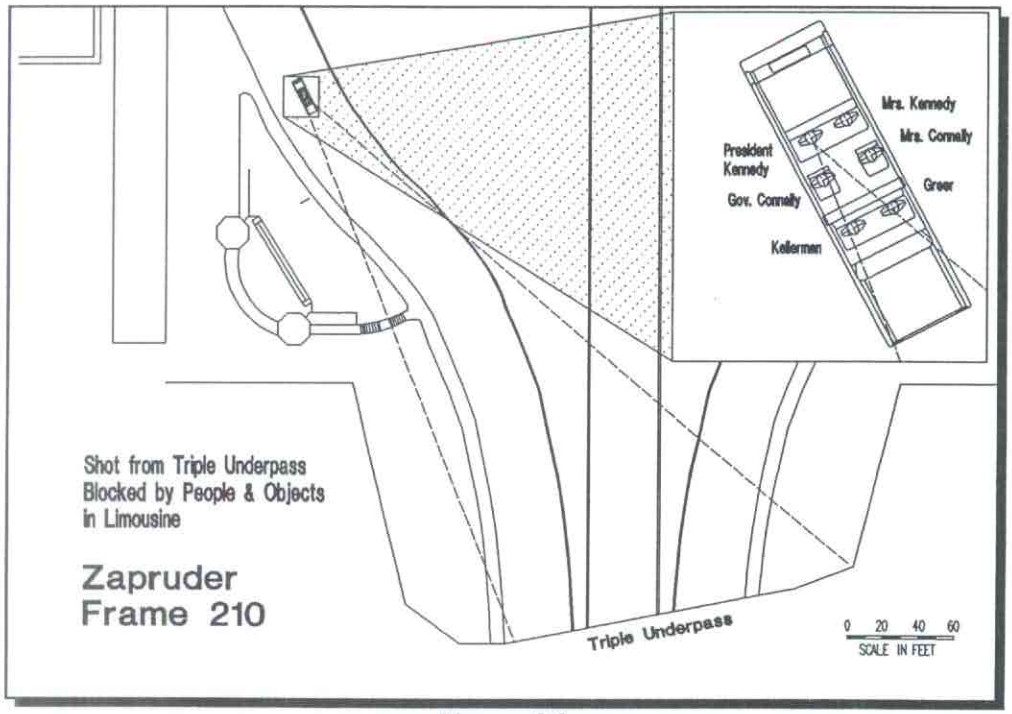


Diagram 2.3

the President's body and connected the wound in his throat and back, I was forced to consider each wound as separate and distinct. This reasoning, by necessity, required that I look at the evidence of the other shots fired during the assassination. For the moment, I had to consider the possibility of either the back wound or the throat wound occurring between Zapruder frames #207-210.

I had, for a time, accepted the opinion that the throat wound was inflicted around Zapruder frame #210 either by a shot from the left front that traversed the body or by a shot that was fired simultaneously but somehow did not traverse the body - lodging in Kennedy's chest. Having eliminated any shot traversal scenarios and the possibility of a shot from the grassy knoll or the triple underpass, I was left in a quandary of my own. There was no path for a bullet intersecting with the front of Kennedy's throat that was not either obstructed or that would have required a highly unlikely and difficult shot for a sniper. Before continuing, I had to recount the evidence on the wound in President Kennedy's throat.

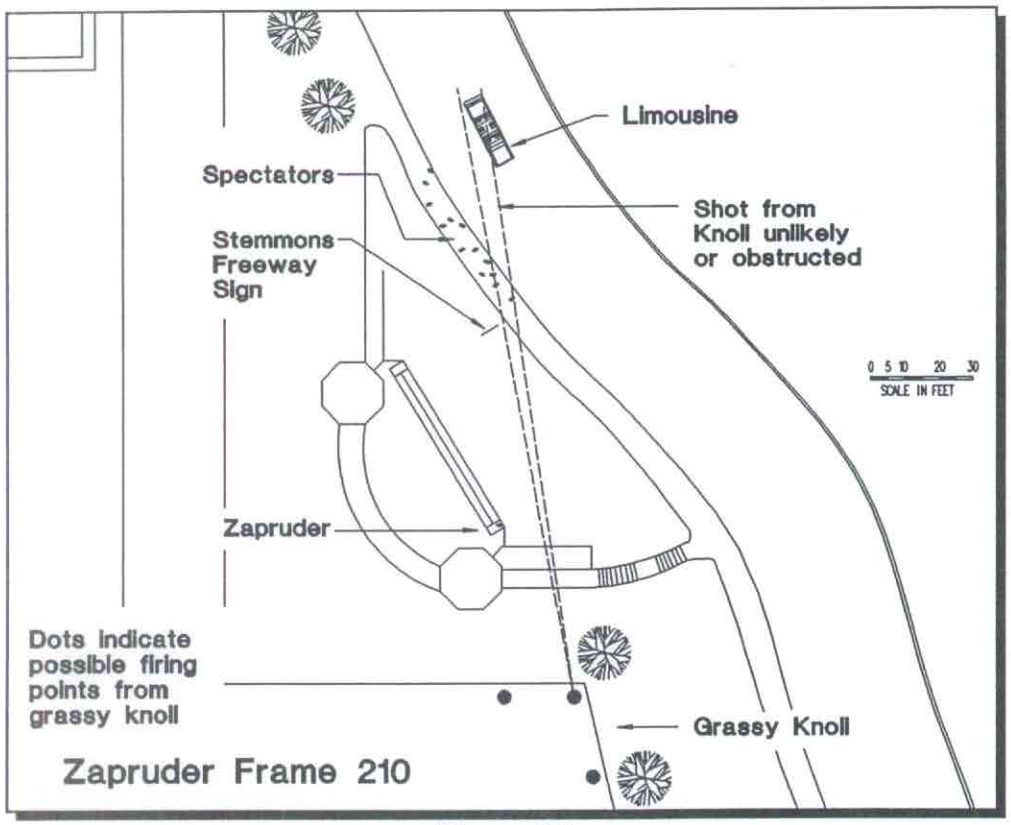

Limousine
Spectators
Shot from
Knoll unlikely
or obstructed
Stemmons
Freeway
Sign
0 5 10 20 30
SCALE IN FEET
Zapruder
Dots indicate
possible firing
points from
grassy knoll
Grassy Knoll
Zapruder Frame 210

Diagram 2.4

THE THROAT WOUND

1. The Dallas doctors, although describing the throat wound as an entry wound, were not absolutely sure that it was caused by a bullet. The wound was not round or oval and it was too small to have been caused by the average bullet.

2. The combined testimony of the Dallas doctors outlined a projectile path from the right side of the adam's apple, upward toward the trachea at the upper larynx - a path inconsistent with any possible gunshot trajectory (unless the shot was fired from inside the limousine.)

3. The throat wound could not be probed to ascertain a clear path through the body.

4. FBI analysis of the President's shirt and tie revealed no traces of metal around two slits in the collar. It is most likely that the throat wound is totally unconnected with the damaged shirt collar.

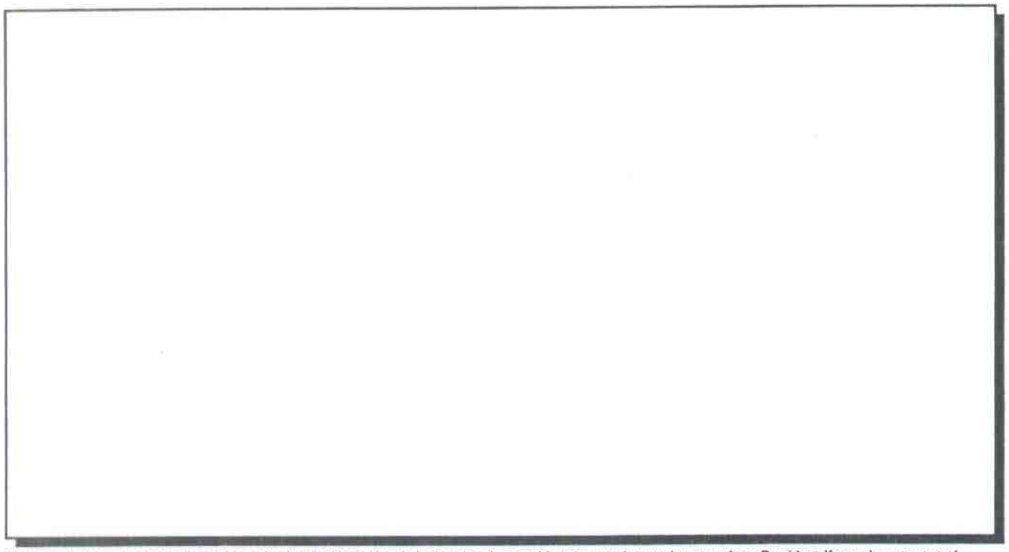
5. The President showed clear signs of an injury to the throat between Zapruder frames #207-210. He did not, however, immediately lose consciousness as he struggled, showing signs he had difficulty breathing. This behavior showed that the throat wound was probably not immediately life-threatening.

DAMAGED SIDE PANEL

If the throat and back wounds occurred at different times, than one of the two had to have occurred at the moment the limousine was adjacent to the Stemmons Freeway sign. Judging by the President's actions around frame #207-210 of the Zapruder film, I was beginning to think that this was when the throat wound was inflicted. What convinced me that I was on the right track was a photograph of the limousine which was taken shortly after arriving at Parkland Hospital.

First, I asked myself some hypothetical questions. What could have caused a non-traversing wound to the front of the throat, left a path pointing upwards from the base of the throat to the top of the windpipe? What would have caused a wound of entry that was neither round nor oval as a bullet wound? What could have been travelling fast enough to penetrate skin, flesh, cartilage, and the trachea

but not fast enough to pass through the body?



Photograph taken just after limousine arrived at Parkland Hospital, showing damaged interior panel very close to where President Kennedy was seated.

The answers to these questions, a bundle of confusing loose ends, did not begin to mesh for me until I saw a color photograph of the Presidential limousine taken when it arrived at Parkland Hospital. The photo showed the back seat of the car where Kennedy was sitting. Covering the seat was blood and fragments of brain tissue. The grotesque puddle in the middle of the car seat was obviously the most important subject for most who saw the picture. There was one detail that captured my attention more than anything else. The side panel beside the rear seat, which would have been to Kennedy's immediate right where he was seated, showed signs of damage. The vinyl covering was torn and flaps hung down in various directions. It was possible that if the vinyl covering had been damaged, other parts of the panel were also damaged. Was this damage caused by a bullet?

According to the Warren Commission, the Presidential limousine had been taken, after the assassination, to Detroit for "repairs." The entire interior and the body were removed and destroyed. In other words, after these "repairs," the limousine was a totally new car. Witnesses in Dallas said the interior of the car was cleaned immediately after the shooting. While this "cleaning" was a blatant example of the destruction of evidence, I had not been aware of the nature of this further "repair." The nature of the overhaul of the limousine aroused my suspicion.

Why was the interior replaced? It was obvious from photographs and testimony that the upholstery was soiled with blood, but no-one had mentioned any bullet holes or damage of any sort. The only thing that could have been classified as damage to the interior was shown in the photograph. Even if there was no other damage to the interior of the car, the damage to the side panel would have

been sufficient motivation for its replacement - if the "repair" was needed to hide the damage.

Why was the body replaced as well? No evidence was ever revealed that there was any damage to the body of the presidential limousine. I could accept the need to replace the upholstery - retaining the original as evidence - but I could see no reason to replace the body unless there was some damage. Besides the dented chrome on the windshield - according to the Warren Commission, not attributed to the shooting - there was no further evidence of damage to the body. The only possible place that the body could have been damaged by a bullet was on the side panel seen in the photograph. If a bullet struck the interior side panel of the car, it would have penetrated the vinyl covering and struck the steel inside the body panel. Furthermore, if the bullet stopped at this point, anyone wanting to destroy evidence would have seen this as a strong motivation for the destruction of the car body.

A SECONDARY WOUND

I consulted an ammunition and firearms expert on the possibility of secondary or ricochet injuries resulting from gunfire. He told me that there was no doubt that fragments set into motion by the impact of a bullet travel at a sufficient velocity, within close range of the impact, to do injury to a person. For example, someone is sitting at a table and drinking from a glass. Someone fires at him and misses, hitting the glass. The fragments from the glass could be travelling at sufficient velocity to penetrate the flesh of the victim. Fragments which are set in motion in this way may even move fast enough to pass completely through a body.

The damage on the limousine and the data on the throat wound finally meshed for me. After coming to different conclusions during my investigation, only to prove them wrong by further research, I made a conclusion that seemed to "fit" all the evidence. This conclusion, as I will show, has also been consistent with the whole chain of evidence on the shooting.

Based on my analysis to this point, I concluded that the first shot to wound President Kennedy missed. The bullet instead hit the side panel of the limousine beside the President and set non-metallic fragments into motion. One of these non-metallic fragments hit the President's throat above the collar. The fragment then ranged upward through his throat, piercing the cartilage of the windpipe beside the larynx. There was an entry wound on the front of President Kennedy's throat. That wound was not caused by a bullet.

The path of the fragment was corroborated by medical testimony. The fact that it was a fragment was supported by the nature of the wound and the photo of the limousine. What I had not yet examined was the trajectory of the bullet which set the fragment in motion.

I was now thrown back into the process of eliminating possible shot trajectories. This time, I

had to find the source for the shot which hit the side panel of the limousine. Fortunately, this time the number of possible sources was fewer. All I had to do was narrow down the possible shot paths which could have placed a bullet in the side panel of the limousine. This was easier said than done.

INVESTIGATION OF SNIPER ATTACKS

A short digression is necessary at this point to explain my general approach to the investigation of the shooting. Whenever a death by sniper attack is investigated, there are a few essential pieces of data that are necessary to pinpoint the source of the gunshots. Accurate autopsy evidence is the keystone to reading the most accurate diagram of the shooting - the victim's body. The proper gathering of evidence at the location where the victim was shot will provide further insights. Once the location of the gunman is located, the other half of the scene of the crime has to be examined in detail. Essential to the proper investigation of a murder by sniper attack is the absolute certainty of the location of the gunman. The investigator cannot possibly track down a murder suspect by confirming his presence at the scene of the crime until the scene of the crime is located!

A proper and objective investigation of the Kennedy assassination as a death by sniper attack had not been completed. The Dallas police simply followed the prompting of bystanders to the most obvious location for a "sniper's nest." Once the rifle and shells where found on the sixth floor of the Texas School Book Depository, the search for further evidence ended. Even the critics of the Warren Commission found evidence of another gunman on the grassy knoll, but went no further in a search for other possible gunmen. Until now, nobody has ever looked at the shooting without a preconception of the location of a sniper (or snipers.)

I wasn't going to let my personal views cloud my vision and point to one or two locations in Dealey Plaza and say, "The sniper stood here." Using a few basic principles and the raw data on the shooting, I was going to **let the evidence tell me** where the real sniper's nest (or nests) were.

A DEFINITION OF TERMS

The explanation of my investigation requires that I define an important term often used.

> **SHOT WINDOW** - the area in space defined by a three dimensional polygon with a vertex at the point of bullet impact and edges that radiate away from this vertex into any unobstructed space.

A shot window is a geometric shape best described by example. Consider *Diagram 2-5*.

A man is sitting at a table in his apartment with his back toward an open window. Suddenly, a loud bang is heard and he slumps forward, shot in the back. There are others in the room who witness the shooting. The shot window for this shooting death is defined by a three dimensional polygon with a vertex at the location of the entry wound on the victim's back and edges that radiate outward into unobstructed space, (the interior of the room and the frame of the window.) If it was found that no one inside the apartment could have shot the victim, then the gunman must have been outside. Notice that the shot window then extends out from the window frame. (The window is unobstructed.) The location of the gunman has to be somewhere within the space bounded by the shot window. Here, the building across the street intersects the shot window and only four windows in that building face into it. It is now certain that the location of the gunman, (the source of the shot,) was in one of four rooms within the shot window.

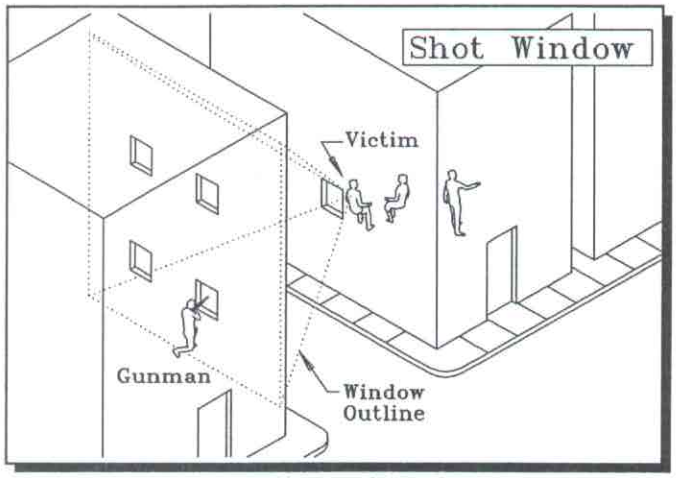


Diagram 2.5

THE WINDOW FOR THE THROAT SHOT

I started narrowing down the possibilities for the source location of the throat shot by charting the shot window for a bullet that struck the side panel of the limousine. The first surprising thing about this shot window was not what lay within it. What was surprising was what it did not contain. Far outside the area defined by this window were the TSBD, the Dal-Tex Building, the grassy knoll, the triple underpass, or any other source location previously considered. The diagram shows that the window for the throat shot radiated to the left of the Presidential limousine. (See *Diagram 2-6.*)

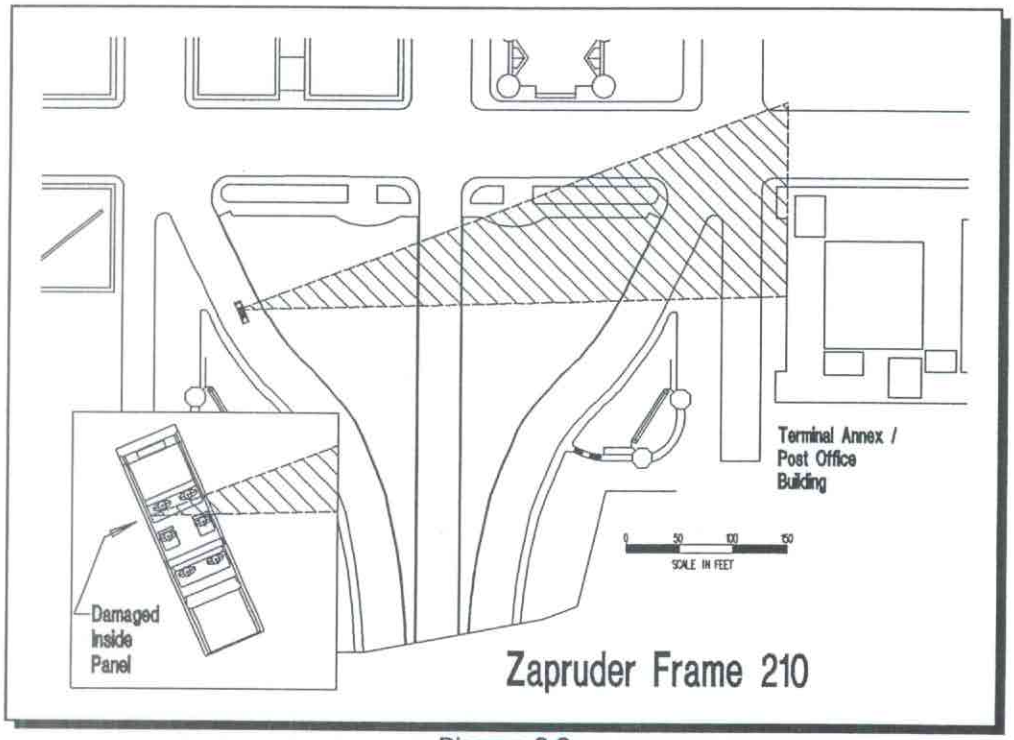


Diagram 2.6

The edges of the window for the throat shot are defined by the obstructions of other people, (Mrs. Kennedy and Mrs. Connally,) the partition behind the driver's seat, and the window beside Mrs. Connally, (which was rolled up halfway.) When radiated away from a bullet impact point on the side panel beside President Kennedy, it becomes clear the shot window is elevated. The height of the shot window rises to about nine feet at the curbside beside the car. Nothing is tall enough to intersect the shot window until it reaches the opposite side of the plaza where the Post Office Annex Building stands.

At first, I thought I was on the wrong track. I hadn't considered this possibility before. Never had it crossed my mind to look at all the other tall buildings surrounding Dealey Plaza and consider them as equally probable locations for a gunman. I noticed that the distance for such a shot would have been much greater than any previously considered. The shots from the TSBD were around 250 feet. If the throat shot was fired from the Post Office building, the distance was more than twice as much.

I spoke with a firearms expert and asked him to tell me about rifles, scopes, and accuracy. Was it possible for a gunman in the Post Office building to shoot with reasonable accuracy from such a distance? He assured me that 1000 yards (3000 feet) was within the average accurate firing range of high-powered, telescopically aimed shooting. Furthermore, he assured me that riflemen equipped with good rifles can easily make accurate shots **without** telescopic sights at a distance of up to 500 yards. This lead me to conclude that a sniper could have shot the President from **any** building in Dealey Plaza.

Besides this determination, ***I had discovered evidence of a shot from the Post Office Building*** - a possible location for a shooter previously unconsidered.

At this point, in order to avoid jumping to conclusions and organize my thoughts, I established for myself some basic conclusions about the throat shot. The shot did not hit President Kennedy directly but set in motion non-metallic fragments which hit him in the front of the throat. This shot probably hit the side panel of the limousine immediately beside the President. The source for the shot was somewhere within its shot window which only intersected with the Post Office Building. The distance for a shot from the Post Office Building would have been about 500 feet, within the average range of accurate rifle shooting.

Having established these facts about the throat shot, I could continue to look into the rest of the shooting. My investigation of the other shots was to gain me more insight into the throat shot.

THE BACK WOUND: WHEN AND WHERE?

1. The Dallas doctors are not clear whether they ever found or treated the wound in Kennedy's back. It is possible that they were preoccupied with their attempts to sustain the President's life. The amount of blood spilled over the shoulders could have obscured the wound.

2. The back wound itself was an atypical bullet wound. Witnesses at the autopsy have testified that the penetration of the skin and flesh was only 2 inches deep at the most. The wound was smooth around the edges, showing the classic symptoms of an entry wound.

3. The autopsy doctors could not probe the back wound to find a path through the body. An autopsy technician interviewed by David Lifton told of seeing the probe push against but not penetrate the pleura of the chest cavity.

4. There were two possible moments, shown by the Zapruder film, that the back wound could have been inflicted. The President's movements at frame 225 have been widely interpreted as evidence of the shot to the back. At frame 312, Kennedy's head and shoulders made a violent motion to the front over a distance of about 6 inches in 1/18th of a second. This movement, as proven by the principles of mechanics, is too rapid to have been caused by anything other than a collision - that between President Kennedy's body and a bullet. This is the second possibility for the shot to the back.

THE BACK WOUND

What remains to be done is to corroborate the evidence and determine the most probable explanation of the back wound. A possible answer surfaced when *Josiah Thompson*, in his book Six Seconds in Dallas, proposed the first plausible explanation of the back wound that attempted to corroborate the evidence. Thompson pointed out that the ammunition allegedly used by Oswald was old and unreliable.[10] He also noted that many earwitnesses heard a shot which sounded unlike normal rifle fire and more "like a firecracker."[11] These observations, when combined with the existence of the pristine stretcher bullet and the unusual "non-traversing" back wound, led Thompson to conclude that President Kennedy was hit in the back by a "short" round of ammunition.

What would make a rifle cartridge "short?" Knowledgeable riflemen attribute a cartridge

malfunction to either of two factors - insufficient loading or old powder. A working rifle cartridge can be hand loaded from components. When this is done, the possibility exists that too little powder is used. When old ammunition is used the powder within the shell may burn slowly or not at all. A cartridge that malfunctions for any reason is usually called a "short" round.

Thompson and others observed that the Winchester Western Company stopped manufacturing 6.5 mm Mannlicher cartridges in 1944. The only way to obtain working ammunition for a discontinued type is to hand load it or purchase old stock. Therefore the only available cartridges of this type would have had to have been nearly twenty years old (and unreliable,) or handloaded.

A bullet travelling at much less than normal velocity could possibly cause a shallow wound and retain an undistorted shape. Thompson's suggestion pointed to a possible explanation of the back wound, but it didn't pinpoint **when** it occurred. Based on further investigation, Thompson placed the occurrence of the back wound **after** the throat shot. His conclusion further supported the possibility that the back and throat wounds were separate and distinct.

Thompson, however, made an assumption that wasn't necessarily supported by fact in all aspects. How is it to be assumed that the misfire heard in Dealey Plaza came from Oswald's Mannlicher-Carcano? With all the conflicting evidence of the shooting, it remains questionable whether the rifle found in the Texas School Book Depository was ever fired **at all** on November 22, 1963.

The only safe conclusion to be made from these facts is that **some** rifle misfired during the shooting episode and that the back wound was most probably caused by **a** misfired bullet. The earwitness reports are evidence of a misfire and the nature of the back wound is consistent only with a misfired bullet.

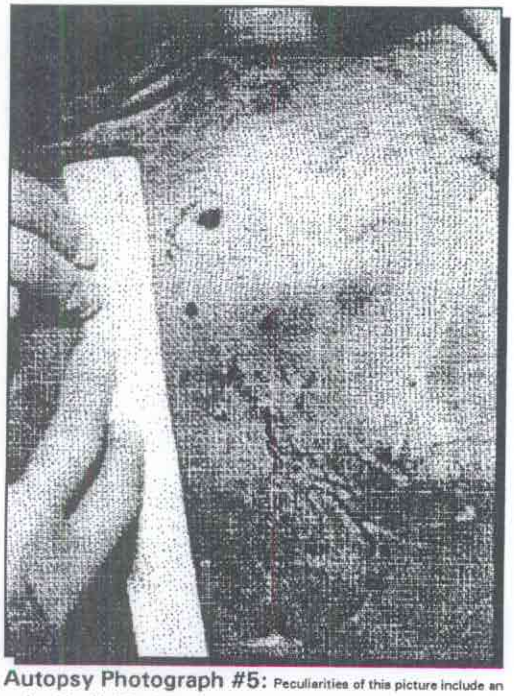
Can anything else be known with certainty about the back wound? Yes, however additional deduction on the wound in President Kennedy's back cannot be as definitive as the previous conclusion. The farthest any additional deduction can go is to narrow down the possibilities and determine the most probable answers to the questions **when** and **where**. **When** was the wound in the President's back inflicted? **Where** on the President's back was the wound?

WHERE?

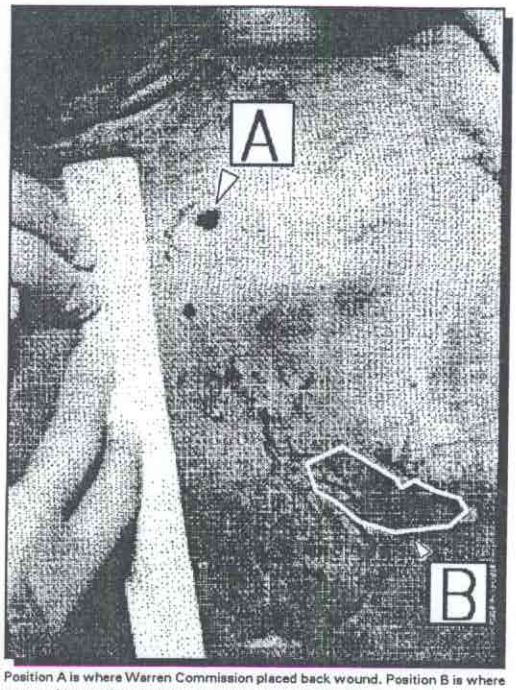
A point of heated controversy surrounds the location of the wound in President Kennedy's back. Autopsy charts, photographs, written reports, and eyewitness accounts are not unanimous in locating the wound. The Warren Commission concluded that the back wound was in a position close to the top of the shoulder. Autopsy documents, on the other hand, are more precise in locating the wound at the "level of the third thoracic vertebra." This anatomical landmark is at the level of the shoulder blade -

much lower than the position determined by the Commission.

Which position - the upper or the lower - has the most support of evidence? The preponderance of evidence supports the lower position. The death certificate, signed by President Kennedy's personal physician, *Admiral George Burkley*, confirms in writing the anatomical location. Both Drs. Humes and Boswell placed the wound in the same position when filling out autopsy body charts. Witnesses of the autopsy recall the back wound at a level with the shoulder blade. The secret Warren Commission transcript of January 27, 1964 specifically locates the wound at the level of the shoulder blade. Finally, the autopsy photographs, while not at first appearing to show a low position for the back wound, show signs of retouching at the exact position shown in the autopsy body charts. This retouching only adds more credibility to the placement of the back wound at the lower position.



Autopsy Photograph #5: Peculiarities of this picture include an ungloved hand holding the scale and the unusual position of the body.



Position A is where Warren Commission placed back wound. Position B is where some evidence of retouching appears to obscure "low" back wound position.

WHEN?

Because further evidence accounts for the forward movement of the President's body at Zapruder frame 312, the only possible time the back wound could have been inflicted was from frame 225 to 230. President Kennedy reacted to the throat wound by bringing his hands toward his collar in a way that his arms were in an inverted "V" position. This is seen at Zapruder frame 225, as the President emerges from behind the Stemmons Freeway sign.

Within five frames, or 5/18ths of a second after reacting to the throat wound, President Kennedy sweeps his elbows upward into a defensive stance, with his forearms parallel to the ground.

Zapruder Frame #225

This reaction is so rapid that it is quite distinct from the earlier reaction to the throat wound. The speed of the arm movement and the forward movement of the upper body strongly suggest a collision reaction.

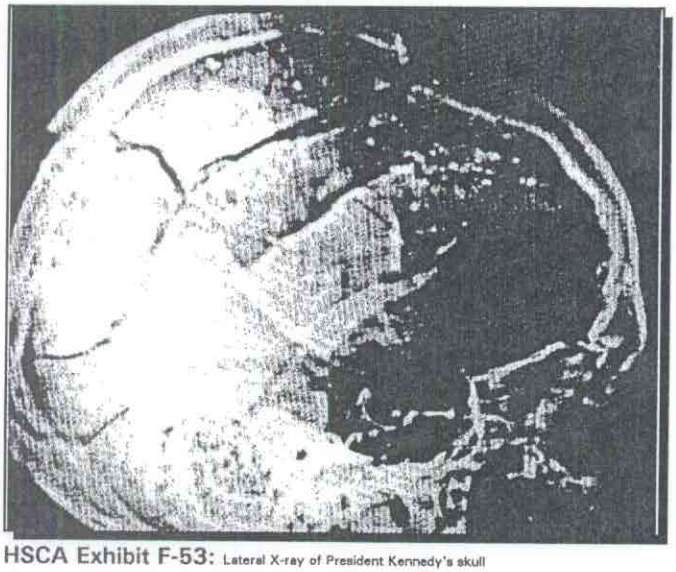
Additionally, after Zapruder frame 225, President Kennedy continued to retain consciousness. This suggests that the back wound, like the throat wound, was not extremely serious or life-threatening. This is consistent with the shallow wound observed at the autopsy. Therefore I concluded that the most probable moment the back wound was inflicted was from Zapruder frame 226 to 229.

Zapruder Frame #230

THE FATAL HEAD WOUNDS

The best diagram of the fatal head wounds is the skull of the slain President. Unfortunately, there remain many questions on the validity of the evidence at hand. Of all the X-rays originally taken of the President's body, (covering all his anatomy,) only two of the skull remain. These X-rays have been "burned" twice, corrupting their value in detailed examination.[12] The HSCA pathology panel clearly stated their disappointment with the quality of the X-rays.

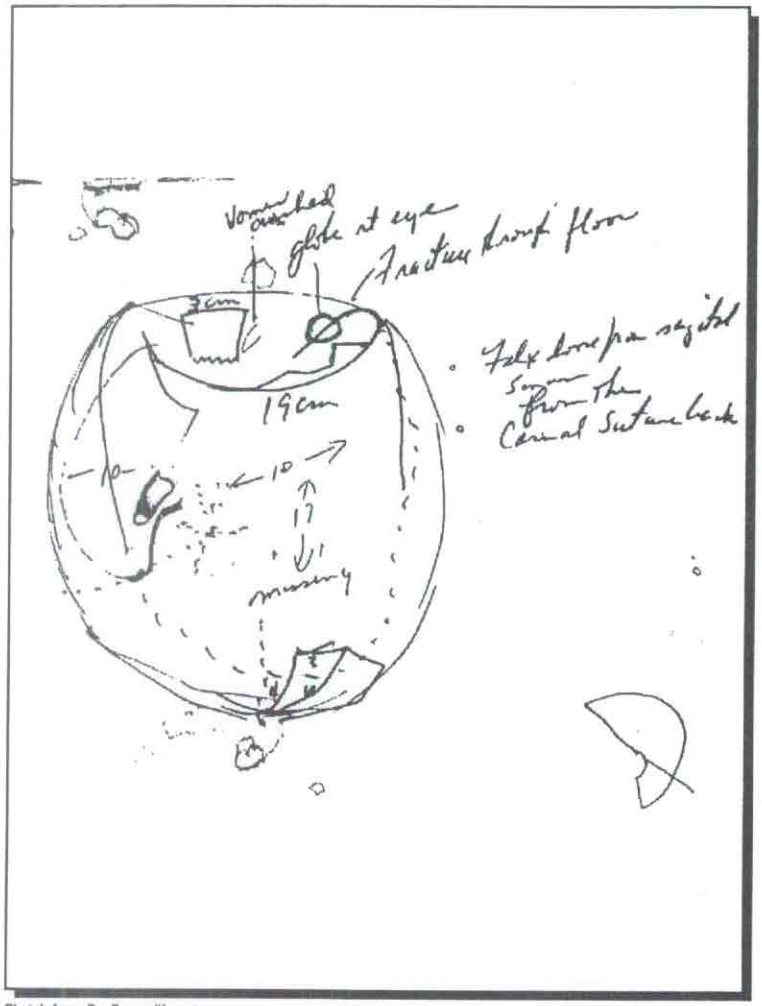
Given that these two X-rays are all that is available for public consumption, researchers must make do. The truth is contained in the existing X-rays and photographs, but they must be analyzed carefully to account for possible retouching and damage - innocent or not.



HSCA Exhibit F-53: Lateral X-ray of President Kennedy's skull

Besides the X-rays, there were photographs taken of the President's body that included the head and skull. These too were found to be of inferior quality by the HSCA and show signs of retouching that weigh against their validity. Still, retouching, no matter how craftily applied, can only hide some of the truth. Valid information can be gleaned from the photographic record that aids the process of logical deduction. How many wounds did President Kennedy suffer to the head? ***There emerge two patterns of entrance and exit and therefore evidence of two shots hitting President Kennedy in the head.*** The conclusion that the President was hit by two shots in the head is not supported by the analysis of the autopsy photographs and X-rays alone. Several additional pieces of evidence provide corroboration for this two-shot pattern.

Dr. Thornton Boswell, a Navy doctor who assisted at the President's autopsy, made notations of his observances. These notes include a roughly drawn chart depicting the skull as viewed from above. Sections of the skull are outlined and marked as "missing." (See *diagram 2.7* with photo of actual notes.) The largest of these sections is 10 by 17 centimeters.



Sketch from Dr. Boswell's autopsy notes

Another part of the skull is outlined roughly to the left of the midline and is marked as being 10 cm in diameter. Two small outlines show some more missing or loose pieces of the skull on the right side of the occipital at the rear of the head. On the reverse side of this sheet is a curious shape which has been either classified as a rendition of a detached skull fragment or an incomplete attempt to sketch what Dr. Boswell perceived as a bullet path through the head.

Due to the fact that no loose skull fragment available to the autopsy doctors matches the shape of the sketch, I conclude that Dr. Boswell perceived of a bullet path through President's Kennedy's head which connects the 10 cm wide "missing" section on the left front of the skull with the small outlined sections on the right rear of the skull. From this sketch alone, which direction Dr. Boswell perceived the bullet as travelling, (front-to-back or back-to-front,) cannot be determined.

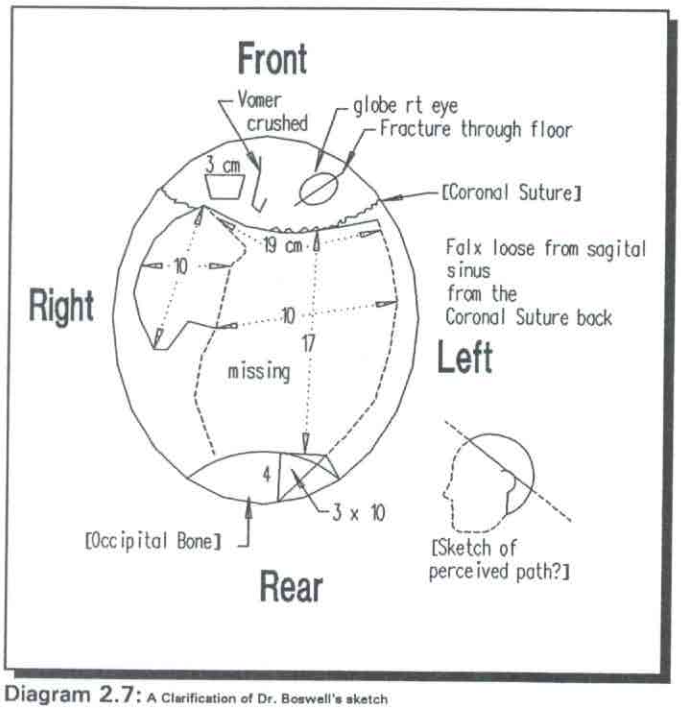


Diagram 2.7: A Clarification of Dr. Boswell's sketch

Again, by applying logical deduction to the evidence on the fatal head wounds, I sought to find what was a most likely pattern for the fatal head shots. Just as with the throat and back wounds, the source for the head wound(s) can be determined by logical deduction, shot window analysis, and photogrammetry. In the case of the skull, additional information can be gleaned from its very nature. The skull is spherical and provides its own diagram of the wounds in the event of a shooting.

Where do the wounds in the President's skull point? It is first very important to pinpoint as closely as possible the position of the Presidential limousine and the position of President Kennedy's body at the moment of the fatal head shot(s.) This can be determined most accurately by applying the principles of photogrammetry to those photographs that depict the President at this moment. The Zapruder film is most helpful in this regard because we know the exact position of the camera and its relationship to other fixed landmarks in Dealey Plaza. The Warren Commission used similar measurements made by the FBI, who employed these same methods, to support its findings.[13] Neither the Commission nor the FBI interpreted the data without bias, so the results of their investigation were erroneous.

An objective photogrammetric measurement of frames #312 and #313 pinpoint President Kennedy's position as corresponding to *Diagram 2.8*. The President was leaning slightly forward and to his left. His head and torso are aligned so that they form a straight line from his head to his waist. President Kennedy's right ear is facing Zapruder's camera directly.

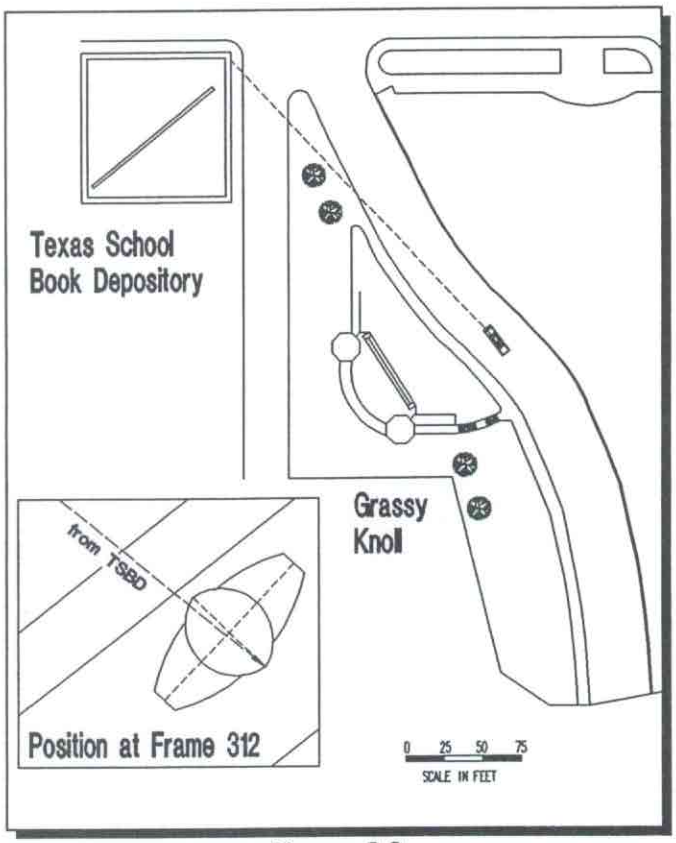


Diagram 2.8

If the first fatal head shot had come from the southeast corner window of the sixth floor of the Texas School Book Depository, what would have been its trajectory through the President's head? *Diagram 2.8* shows that such a shot would have been more to the center of the head, bisecting the skull. No such wounds are shown by the X-rays and photographs. In fact, defenders of the original Warren Commission conclusions have suggested - even insisted - that the fatal head shot entered near the center of the occipital bone and exited at the right front of the skull at the temporal bone.

Here is a problem for the defenders of the Warren Commission. The trajectory for the fatal head shot that they insist is true does not correspond to a shot from the "assassin's lair." With what source location does this trajectory align? One location is most likely - the **Dallas County Records Building.**

Is there any other evidence that supports the possibility that a sniper fired a shot from this building? Eyewitness accounts of men carrying rifle cases into the Records Building before the shooting raise this possibility. Indeed, a Dallas Deputy Sheriff, *Harry Weatherford*, was supposed to be stationed on the roof of the County Jail Building, next to the Records Building, with a high-powered rifle. Mr. Weatherford would have been in a perfect position to view whatever took place on the roof of the Records Building below him. But was he in his assigned position? If so, did he see anything? The evasiveness of this man in interviews suggests either one of two possible scenarios. Either he was not on the roof at his assigned post and is reluctant to admit his negligence or he was on the roof of the County Jail Building and knows more about the shooting than he is willing to reveal.[14]

One piece of circumstantial evidence points to the possibility of a gunman on the roof of the County Records Building. In 1975, a rifle cartridge was found by the father of *Dean Morgan* of Lewisville (a Dallas suburb,) while repairing the roof of this building. Under the edge of the old roof covering on the side of the building facing Dealey Plaza, there was a spent rifle shell. This shell has distinctive markings on the rim that show that it had been loaded with a sabot round.[15]

A sabot is a plastic insert that surrounds a smaller caliber bullet so that it can be loaded into a larger caliber shell. (See *Diagram 2.9*.) This configuration allows the powerful charge of the larger caliber shell to propel the smaller bullet at greater speeds. When fired in this manner, the bullet is not left with the usual rifling marks from the larger caliber rifle from which it was fired. Also, a smaller bullet can be fired from a gun of matching caliber into water or cotton, giving it distinctive rifling marks from a smaller caliber gun and then loaded into a larger shell with a sabot. If such a bullet is used in a shooting, this will create a piece of evidence that falsely incriminates the owner of the smaller caliber gun that matches the rifling marks on the bullet.

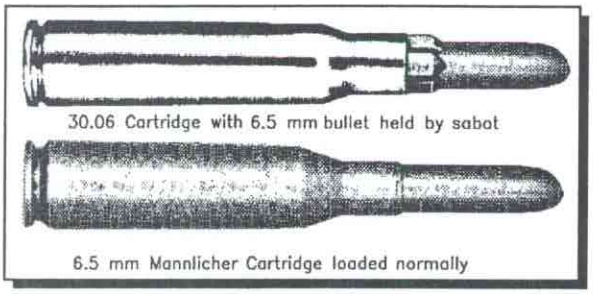


Diagram 2.9

The obvious fragmentation of the bullet in the fatal head shot suggests a bullet impacting at higher than usual speed and impulse. This is another characteristic of a sabot round. To have such an explosive impact, a bullet does not necessarily have to be an explosive or frangible type. All that is

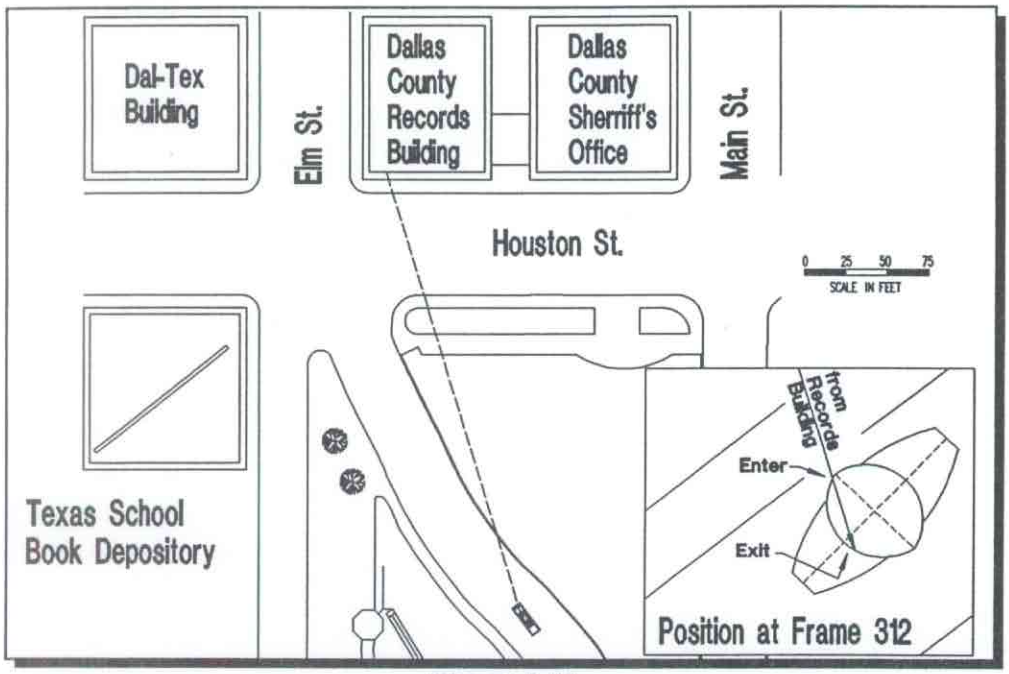


Diagram 2.10

needed is the extra power of the large shell load. Normal lead bullets and metal-jacketed bullets also break into fragments on impact under such conditions.

These aspects of the case can only serve to clarify the details of this one certainty - ***the trajectory charted by the wounds in President Kennedy's head does not align with the Texas School Book Depository but point directly to the Dallas County Records Building.*** *Diagram 2.10* shows this shot's trajectory. Therefore I conclude that a shot was fired from the roof of the Dallas County Records Building and struck President Kennedy in the head at frame #312 of the Zapruder film.

Is that all the X-rays, the autopsy photographs, and the Zapruder film show? No. There is additional evidence which suggests that President Kennedy was hit by a second bullet in the head at frame #313 of the Zapruder film.

Almost since the day of the shooting, there have been those who insist that a shot was fired from the President's right front, (from the "grassy knoll,") which struck him in the right temple and

propelled him rearward and to the left. *Diagram 2.11* shows the theoretical course a bullet fired at this angle would have to take through the President's skull. Is this consistent with the nature of the head wounds as shown by the X-rays, photographs, and medical observations?

The Dallas doctors observed a large exit wound in the right rear portion of the President's head. In fact, to this day, all of the Parkland Hospital doctors who saw the President's head wounds agree on this more than any other aspect of the case.[a] If a bullet entered the skull at the right temple, coming from the grassy knoll, it most probably would not have exited the President's head at the **right** rear but the **left** rear. It is also important to note that the damage shown on the right temple of the skull in the X-ray is an **exit** wound. This is inconsistent with the shot originating on the grassy knoll.

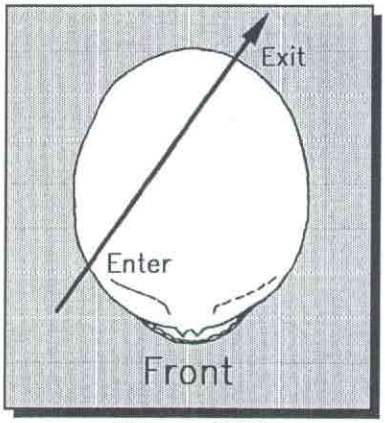


Diagram 2.11

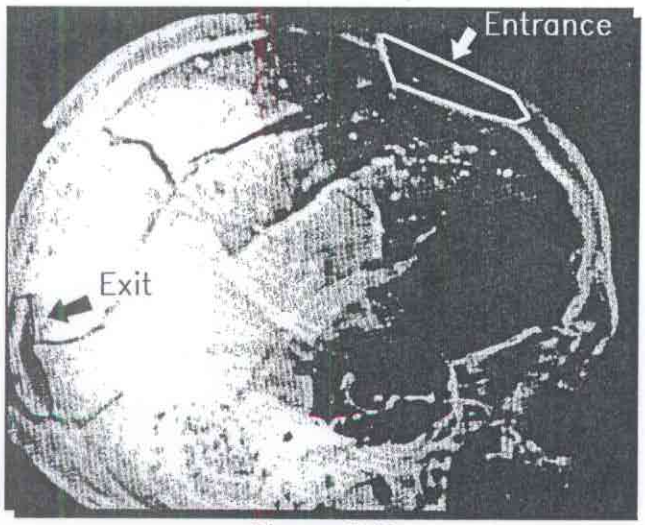
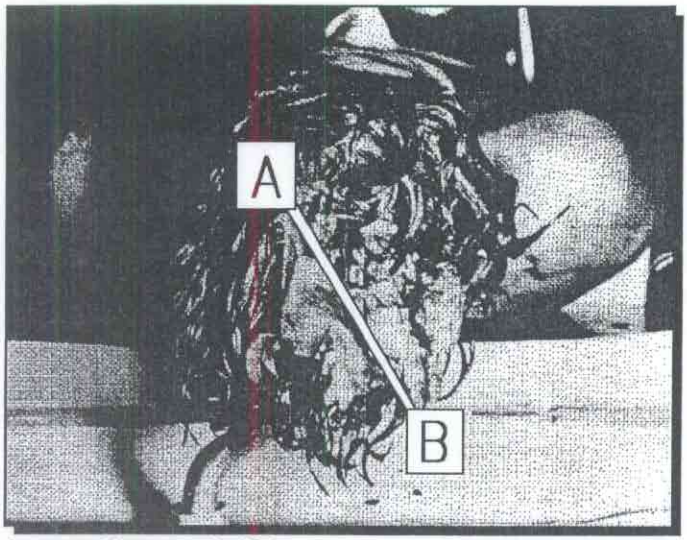


Diagram 2.12

So where is the entrance wound to match the exit wound on the right rear of the President's head? Such an entrance wound can, with some close examination, be found in the X-rays and autopsy photographs. Traces of an entrance wound can be seen within the parietal or frontal bone which is missing in the X-rays except for the left hemisphere from the squamous suture to the upper temporal ridge. (See *Diagram 2.12*.) The autopsy photograph showing the President's head as viewed from above clearly shows a pattern of damage that follows

[a] The interviews of the Dallas doctors conducted by WGBH Boston for the 1988 broadcast of NOVA, Who Killed President Kennedy?, dramatically demonstrate their unanimous placement of the large head wound at the right and rear of the skull.



Autopsy Photograph #6A

a traceable line between this point of entrance and the large exit wound described by the Dallas doctors. In addition, Dr. Boswell's autopsy notes make a strong suggestion of this very pattern of damage to the skull.

Is such a trajectory for the fatal head shot at frame #313 of the Zapruder film consistent with the obvious movement of the President's torso in reaction to it? Consider *Diagram 2.13*. If one charts the forces acting on the President's head and torso as a result of the shots at frames #312 and #313 as I have concluded so far, the resultant force, in strength and direction, is entirely consistent with the actual movements seen in the Zapruder film.

Is there more evidence that the President was hit in the head in this fashion? A long mark or gouge in the north sidewalk of Elm Street was noticed by many people after the assassination. In a contemporary photograph, this mark appears to have been made by a bullet. In fact, those who brought the mark to the attention of the news photographer described it as such on the day of the shooting. The unusual aspect of this mark, if it is a bullet mark, is its position and angle. The gouge in the concrete forms a line that does not point at either the Texas School Book Depository or the grassy knoll. The direction of the mark in the sidewalk aligns perfectly with the Post Office Building on the opposite side of Dealey Plaza. Furthermore, if an imaginary line is drawn which connects this mark with the Post Office Building, it intersects with the exact position of the Presidential limousine at frame #313 of the Zapruder film. (See *Diagram 2.14*.)

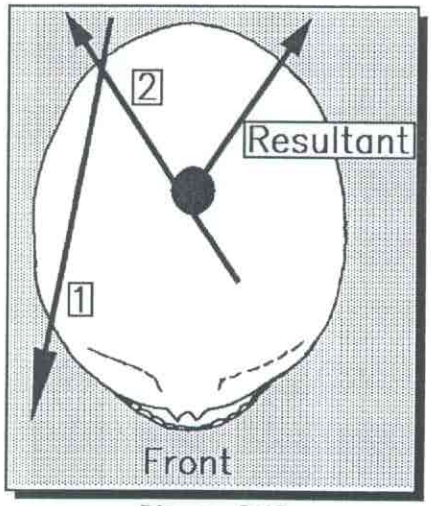


Diagram 2.13

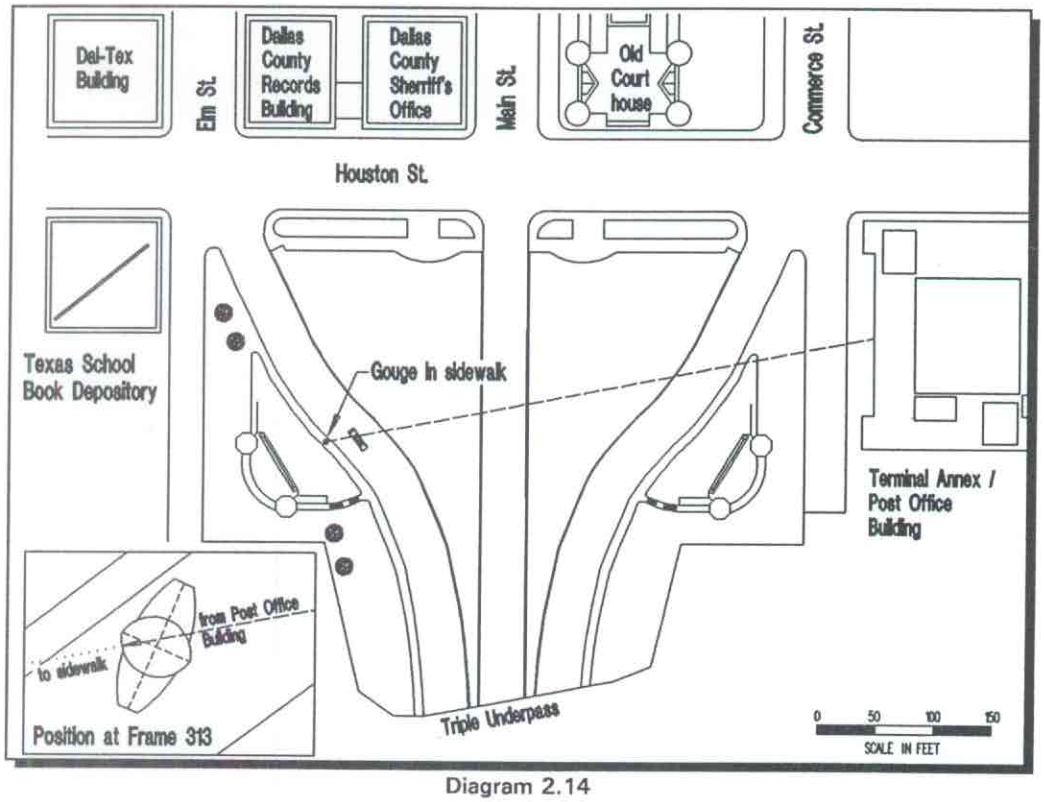


Diagram 2.14

SOME CONCLUSIONS ON THE SHOOTING

After making these observations and deductions about the shooting, I was able to conclude that four shots had hit President Kennedy. The first missed hitting him directly, but hit the limousine very close to him. The President was wounded in the throat by flying debris set into motion by this shot. This shot occurred at the moment of Zapruder frame #207 and President Kennedy can be seen reacting to the throat wound as he emerges from behind the Stemmons Freeway sign. The shot which caused the throat wound most probably came from the Post Office Building across Dealey Plaza, opposite the limousine. The second shot to hit the President was fired from behind but I had not determined the exact location of its source. President Kennedy was wounded in the back at the position of the third thoracic vertebra, near the right shoulder blade. This shot was unusual in that it was a "short" round that did not penetrate the President's back more than two inches. At the moment of Zapruder frame

#225, the shot which caused the back wound was fired and President Kennedy reacted from frame #226 to #230. Even after being wounded twice, the President probably would have survived at this point. The third and fourth shots to hit President Kennedy struck him in the head almost simultaneously. At the moment of Zapruder frame #312, a shot was fired from the roof of the Dallas County Records Building. The bullet from this shot entered the President's head near the center of the occipital bone. It exited just above and forward of the right ear and forced skull and tissue outward as is so graphically shown by the Zapruder film.

Almost simultaneous to this first fatal head shot, another bullet struck the President on the top left side of the head toward the front, traversed the skull, and exited at the lower right of the occipital bone. The exit from this second shot partially obscured the entrance wound from the first fatal head shot. The bullet from the second fatal head shot continued its flight, hitting the sidewalk on the north side of Elm Street and probably stopped under the grass beyond.

The "backward head snap" seen in the Zapruder film was the result of the force of the second head shot overcoming the dissipated forces of the first head shot. Contrary to many opinions that the backward head movement was caused by a shot fired from the grassy knoll, I had shown that such a scenario was not completely consistent with the evidence.

This does not necessarily mean that I completely rule out the possibility of any shots being fired from the grassy knoll. In fact, I conclude that two shots were fired from the grassy knoll which missed. This I base on the evidence of two "furrows" in the grass south of Elm Street.

CHAPTER NOTES

1. NOVA broadcast November 15, 1988: Who Shot President Kennedy?

2. The HSCA had a group of experts from the National Academy of Sciences analyze the controversial photographs of *Lee Harvey Oswald* holding a rifle and communist newspapers. Their panel charged with analyzing the pictures was biased in favor of finding the photographs to be genuine. The testimony of dissenting researchers and of *Robert Groden*, a Committee photographic expert, did not dissuade the panel from accepting without qualification the NAS findings that the photos were genuine and unretouched. With such unusual treatment accorded the "backyard photos," which are considered peripheral to the case, I was surprised to find that photographs of the actual shooting received only a cursory examination.

3. There was one person who took film of the assassination and was in a perfect position to capture the entire event. *Beverly Oliver* is shown in several still photographs and the Zapruder film standing on the south side of Elm Street and operating a movie camera. For years, researchers were unable to locate the woman and her film. Finally, before the Congressional hearings of 1978 began, she was located. Her connections to the assassination probably go farther than simply being an eyewitness.

   Miss Oliver worked for *Jack Ruby* at one time and her husband, at the time of the assassination, had ties to organized crime in Dallas. She claims that her film was taken by an FBI agent, *Regis Kennedy*, on the day of the shooting. In charge of investigating organized crime in New Orleans, Regis Kennedy was suspected of being "on the payroll" of *Carlos Marcello*, the New Orleans Mafia boss. The mention of Agent Kennedy's name in connection with Ms. Oliver and Dallas exposes a truly twisted web of curiosities involving organized crime, FBI agents, and Dallas.

4. Autopsy Photo #3 and HSCA Exhibit F-36, (a tracing of Autopsy Photo #3 by Ida Dox)

5. *Dr. Charles Baxter* (6WCH42,) *Dr. Charles Carrico* (6WCH6,) *Dr. Donald Curtis* (6WCH60,) *Dr. Robert McClelland* (6WCH33,) *Dr. Malcolm Perry* (3WCH368,370)

6. Autopsy Photo #5 and HSCA Exhibit F-20 (a tracing of Autopsy Photo #5 by *Ida Dox*)

7. 2WCH93

8. Thomas Buchanan, Who Killed Kennedy?, p. 113

9. After considering the obstructions to such a shot, many had been forced to consider the possibility of a "third" underpass assassin.

10. Josiah Thompson, Six Seconds in Dallas, p. 167

11. *Kellerman* (18WCH724); Others with similar testimony were *Bennett* (18WCH760), *Hickey* (18WCH765), *Kivett* (18WCH778), *Ready* (18WCH749), *Taylor* (18WCH782), and *Youngblood* (18WCH766). All were Secret Service Agents, ostensibly trained to discern the sound of gunfire.

12. Harold Weisberg, Post Mortem, p.180.

13. WCR 99-107

14. Robert F. Groden & Harrison Livingstone, High Treason, p. 162.

15. Jim Marrs, Crossfire: The Plot That Killed Kennedy, p. 317.

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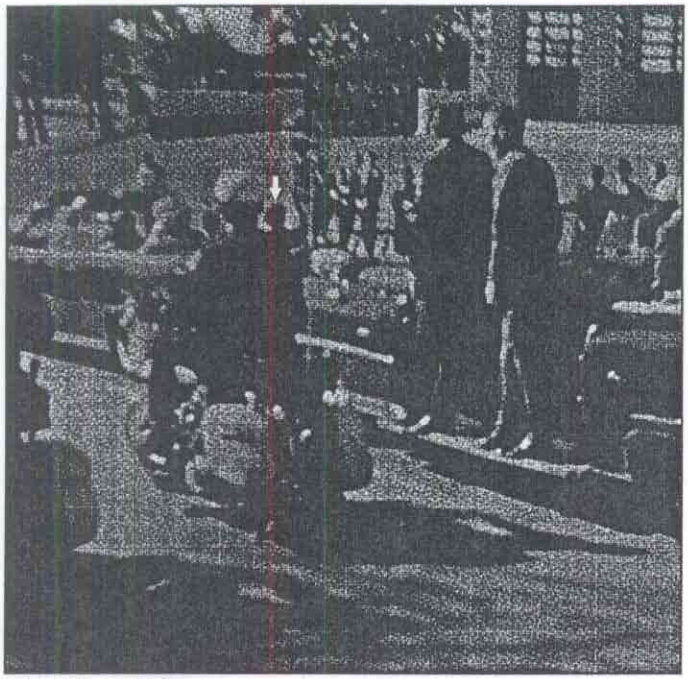
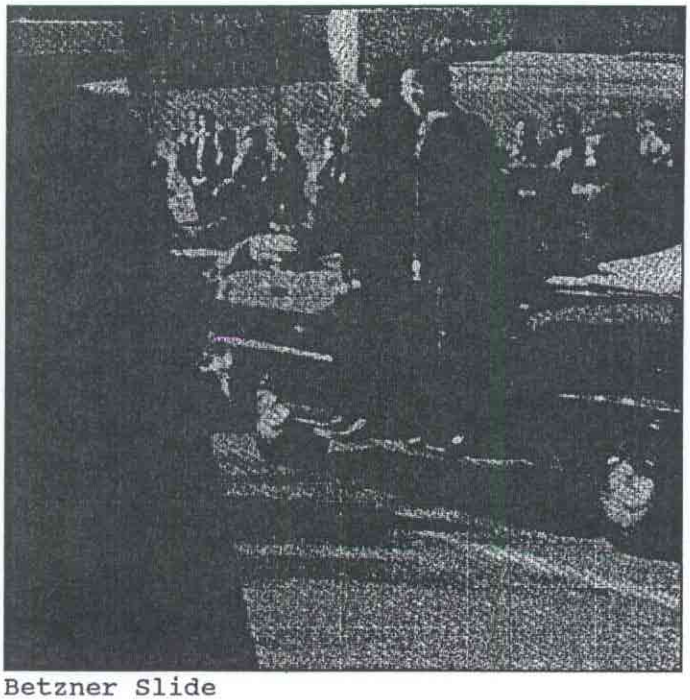


Willis Slide



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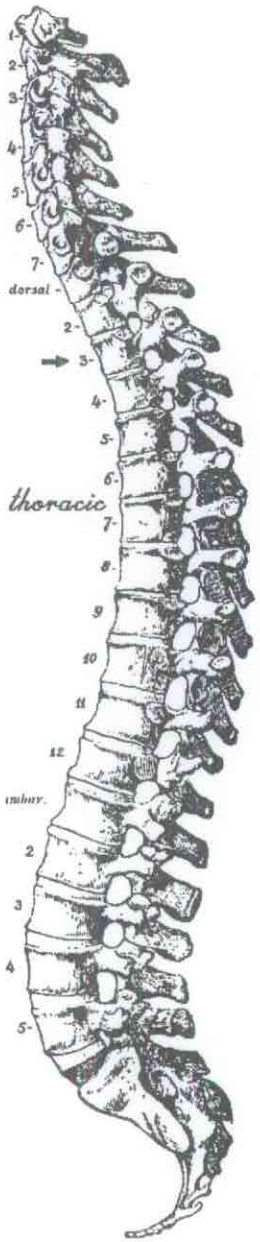

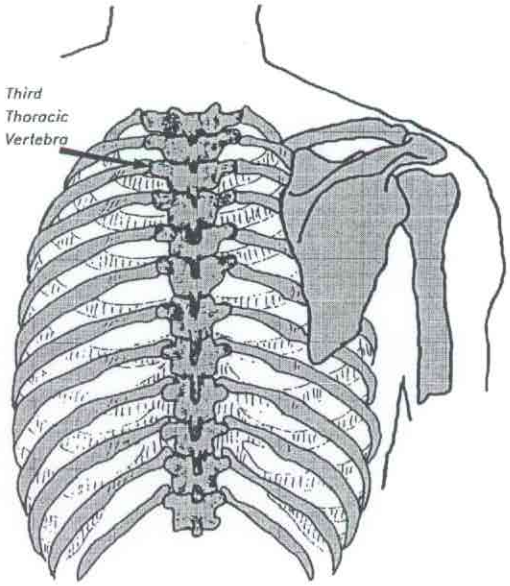

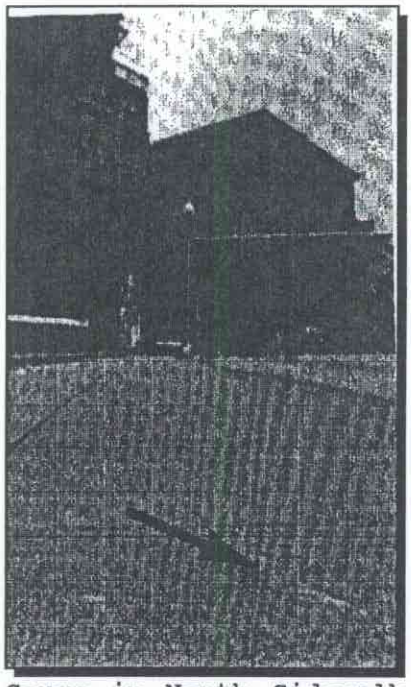

Gouge in North Sidewalk of Elm Street